

RECEIVED
CENTRAL FAX CENTER

OCT 16 2006

PTO/SB/21 (07-06)

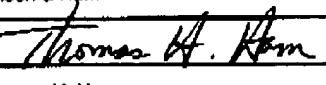
Approved for use through 09/30/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM		Application Number	10/820,593
(to be used for all correspondence after initial filing)		Filing Date	April 21, 2004
		First Named Inventor	In Kwan JEONG
		Art Unit	3723
		Examiner Name	Rachuba, Maurina T.
Total Number of Pages in This Submission	18	Attorney Docket Number	INK-002

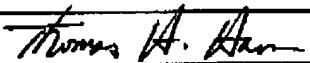
ENCLOSURES (Check all that apply)			
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/ Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.62 or 1.63	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <input type="checkbox"/> Revised Appeal Brief (response to Notification of Non-Compliant Appeal Brief)	
			<input type="checkbox"/>
Remarks			

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Wilson & Ham		
Signature			
Printed name	Thomas H. Ham		
Date	October 16, 2006	Reg. No.	43,654

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Thomas H. Ham	Date	October 16, 2006

This collection of information is required by 37 CFR 1.6. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including the gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Attorney Docket No. INK-002

PATENT APPLICATION

RECEIVED
CENTRAL FAX CENTER
OCT 16 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant(s): In Kwon Jeong

Group Art Unit: 3723

Serial No. 10/829,593

Confirmation No. 6718

Filed: April 21, 2004

Examiner: Rachuba, Maurina T.

For: APPARATUS AND METHOD FOR POLISHING SEMICONDUCTOR
WAFERS USING ONE OR MORE POLISHING SURFACES

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REVISED APPEAL BRIEF UNDER 37 C.F.R. 41.37 IN RESPONSE TO
NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

Sir:

A Notice of Appeal was filed in this case on June 29, 2006. An Appeal Brief was filed on August 28, 2006. The present Revised Appeal Brief is being filed in response to a Notification of Non-Compliant Appeal Brief mailed on September 15, 2006. This Notification was issued for failure to comply with one or more provisions of 37 C.F.R. 41.37 on the grounds that the Summary of Claimed Subject Matter of the original Appeal Brief did not map the independent claims 1 and 10 to the specification by page and line numbers or paragraph numbers and/or drawings, in any, and that the Claims Appendix of the original Appeal Brief should only list claims that are on appeal. The present Revised Appeal Brief meets the requirements of 37 C.F.R. 41.37.

CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being facsimile transmitted to the Patent and Trademark Office facsimile number (571) 273-8300 on October 16, 2006.

Number of Pages: 18 (including TRANSMITTAL LETTER)

Signed: Thomas H. Ham
Typed Name: Thomas H. Ham

1. Real Party in Interest

5 The real party in interest in this appeal is INOPLA Inc., a California Corporation, having a place of business at 1930 Junction Avenue, San Jose, California 95131.

II. Related Appeals and Interferences

10 There are currently no related appeals or interference proceedings in progress that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the present Appeal.

III. Status of Claims

15 Claims 1-113 were originally filed with the application on April 21, 2004. In response to a restriction/election requirement of March 11, 2005, claims 1-6 and 10-23 were elected. Consequently, claims 7-9 and 24-113 were withdrawn from consideration. No claims have been amended, canceled, or added in response to any Office Action. Furthermore, no claims have been amended, canceled, or added for 20 purposes of this Appeal.

25 Claims 1-6 and 10-23 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,908,347 ("Nakajima et al.") in view of U.S. Patent No. 6,346,038 B1 ("Kajiwara et al.").

This Appeal is made with regard to pending claims 1-6 and 10-23.

IV. Status of Amendments

30 No amendments were filed subsequent to final rejection.

V. Summary of Claimed Subject Matter

The claimed invention is an apparatus for polishing objects, such as semiconductor wafers, utilizing one or more polishing surfaces, multiple wafer carriers and at least one load-and-unload cup (See lines 15-17 on page 2 in paragraph [0006]). According to an embodiment of the invention, as recited in claim 1, an apparatus for polishing objects comprises a first object carrier (262a), a second object carrier (262b), a first object relay device (280b) and a second object relay device (280a or 280c) (See Fig. 1, line 32-33 on page 8 and lines 1-2 on page 9 in paragraph [0049], and lines 28-30 on page 10 in paragraph [0056]). The first object carrier (262a) is positioned over a first polishing surface (255a) (See Figs. 1 and 2, and lines 7-9 on page 12 in paragraph [0058]). The second object carrier (262b) is positioned over a second polishing surface (255b) (See Figs. 1 and 2, and lines 7-9 on page 12 in paragraph [0058]). The first object relay device (280b) is positioned between the first object carrier (262a) and the second object carrier (262b) (See Figs. 1 and 2, and entire paragraph [0053] on page 10). The first object relay device (280b) includes a first load-and-unload cup (282b) and a first pivoting drive mechanism (286b) (See Figs. 1 and 2, and lines 14-16 on page 12 in paragraph [0059]). The first pivoting drive mechanism (286b) is configured to pivot the first load-and-unload cup (282b) to and from the first object carrier (262a) and the second object carrier (262b) about a first pivoting axis to transfer the objects from the first object carrier to the second object carrier (See Figs. 1, 2, 5(d) and 5(e), lines 20-24 on page 12 in paragraph [0059], and lines 25-29 on page 12 in paragraph [0060], entire paragraph [0072] on page 15, and entire paragraph [0073] on page 15). The second object relay device (280a or 280c) is positioned adjacent to one of the first object carrier (262a) and the second object carrier (262b) (See Fig. 1, and entire paragraph [0053] on page 10). The second object relay device (280a or 280c) includes a second load-and-unload cup (282a or 282c) and a second pivoting drive mechanism (286) (See Fig. 1, and lines 14-16 on page 12 in paragraph [0059]). The second pivoting mechanism (286) is configured to pivot the second load-and-unload cup (282a or 282c) to and from one of the first object carrier (262a) and the second object carrier (262b) about a second

pivoting axis to transfer the objects to the first object carrier (262a) or from the second object carrier (262b) (See Figs. 1, 5(b) and 5(g), lines 20-24 on page 12 in paragraph [0059], entire paragraph [0070] on page 15, and entire paragraph [0075] on page 16).

5

According to another embodiment of the invention, as recited in claim 10, an apparatus for polishing objects comprises a plurality of object carriers (262a, 262b and 262c) and a plurality of object relay devices (280b and 280c) (See Fig. 1, line 32-33 on page 8 and lines 1-2 on page 9 in paragraph [0049], and lines 28-30 on page 10 in paragraph [0056]). The plurality of object carriers (262a, 262b and 262c) is positioned over a plurality of polishing surfaces (255a, 255b and 255c) (See Fig. 1, and lines 7-9 on page 12 in paragraph [0058]). The plurality of object relay devices (280b and 280c) is positioned between the object carriers (262a, 262b and 262c) such that at least one object relay device is positioned between two adjacent object carriers (See Fig. 1, and entire paragraph [0053] on page 10). Each object relay device includes a load-and-unload cup (282) and a pivoting drive mechanism (286) (See Fig. 1, and lines 14-16 on page 12 in paragraph [0059]. The pivoting drive mechanism (286) is configured to pivot the load-and-unload cup (282) to and from the two adjacent object carriers about a pivoting axis to transfer the objects between the two adjacent object carriers (See Figs. 1, 5(d), 5(c), 5(g) and 5(h), lines 20-24 on page 12 in paragraph [0059], entire paragraph [0072] on page 15, entire paragraph [0073] on page 15, entire paragraph [0075] on page 16 and entire paragraph [0076] on page 16).

VI. Grounds of Rejection to be Reviewed on Appeal

25

Whether claims 1-6 and 10-23 are unpatentable over Nakajima et al. in view of Kajiwara et al.

30

VII. ArgumentA. Rejection of Independent Claims 1 and 10 Under 35 U.S.C. §103(a)

5 In the Final Office Action of March 31, 2006, the Examiner rejected the independent claims 1 and 10 under 35 U.S.C. §103(a) as allegedly being unpatentable over Nakajima et al. in view of Kajiwara et al. However, the Examiner failed to establish a *prima facie* case of obviousness for these independent claims 1 and 10. Thus, the independent claims 1 and 10 cannot be rendered obvious in view of the 10 cited references of Nakajima et al. and Kajiwara et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, 15 to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 20 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The cited reference of Nakajima et al. discloses a polishing system that includes four polishing units 50 and three transferring units 60 (see Figs. 1 and 3). Each polishing unit 50 includes a polishing plate 52 on which four carrying plates 12 25 can be set (column 5, lines 32-36). Four wafers 11, whose diameter is 8 inches, or five wafers 11, whose diameter is 6 inches, are mounted on each carrying plate 12 (column 4, lines 8-11). The transferring units 60 are respectively provided between the adjacent polishing units 50 (column 6, lines 13-14). Each transferring unit 60 transfers the carrying plate 12, which is located at a discharging position of the 30 polishing plate 52 of the polishing unit 50 located on an upstream side, to a feeding

position of the polishing plate 52 of the polishing unit 50 located on a downstream side (column 6, lines 14-19).

On page 4 of an Office Action mailed on September 29, 2005, the Examiner states that the cited reference of Nakajima et al. "does not explicitly disclose that the object carriers use load-and-unload cups to transport objects." Applicant assumes that the Examiner means that Nakajima et al. does not explicitly disclose that the object relay devices, i.e., the transferring units 60, use load-and-unload cups to transport objects. However, the Examiner then states that Kajiwara et al. "teaches the use of load-and-unload cups to transport objects between storage and a polishing device, and back to storage." The Examiner then asserts that "[i]t would have been obvious to one of ordinary skill to have provided '347 [Nakajima et al.] with the load-and-unload cups taught by '038 [Kajiwara et al.], column 2, lines 40-48, to provide a wafer loading/unloading device which is capable of performing positioning and mounting easily and in a stable manner when attaching the wafer to the polishing head and which can receive the polished wafer in a stable manner and pass it to the next step." Applicant respectfully disagrees with this analysis.

As mentioned above, the transferring units 60 of Nakajima et al. are used to transport carrying plates 12. Each carrying plate 12 can carry four or five wafers 11, which are mounted thereon. However, the cited reference of Kajiwara et al. discloses a wafer loading/unloading device that is used to transport individual wafers. The wafer loading/unloading device of Kajiwara et al. includes a loading device 1 (see Fig. 1) and an unloading device 101 (see Fig. 6). The loading device 1 includes a loading portion 2, which is used to receive a wafer from a wafer conveying mechanism (column 10, lines 19-29) and to attach the wafer onto a polishing head (column 10, line 62, to column 11, line 5). The unloading device 101 includes an unloading portion 102, which is used to receive a wafer from a polishing head (column 12, lines 5-17) and to pass the wafer to a robot arm 140 (column 12, lines 18-24).

As described above, the wafer loading/unloading device of Kajiwara et al. is used to transport individual wafers, while the transferring units 60 of Nakajima et al. are used to transport carrying plates 12. The wafer loading/unloading device of Kajiwara et al. is not designed to transport the carrying plates 12. Therefore, if the 5 wafer loading/unloading device of Kajiwara et al. is substituted for the transferring units 60 in the polishing system of Nakajima et al., as suggested by the Examiner, the resulting polishing system will not function properly because the wafer loading/unloading device of Kajiwara et al. would not be able to transport the carrying plates 12 between the polishing units 50. Thus, there is no suggestion or 10 motivation to modify the polishing system of Nakajima et al. using the teachings of Kajiwara et al. as proposed by the Examiner. Consequently, the Examiner has failed to establish a *prima facie* case of obviousness for the independent claims 1 and 10.

In the Advisory Action mailed on June 8, 2006, the Examiner argues "that 15 there is no evidence, other than the design of the plates, that the overall device will not function if only one wafer is processed at a time." The Examiner further states that "[i]n other words, the polishing system does not depend on how many wafers are attached to the carrying plate." Applicant agrees that the issue is not how many wafers are attached to the carrying plate. Regardless of the number of wafers 20 attached to the carrying plate, the most significant fact is that the polishing system of Nakajima et al. is designed to transport the carrying plate. However, the wafer loading/unloading device of Kajiwara et al. is designed to transport individual wafers, not carrying plates. Thus, the wafer loading/unloading device of Kajiwara et al. cannot be used in the polishing system of Nakajima et al. in the manner suggested by 25 the Examiner. As such, the independent claims 1 and 10 are not obvious over Nakajima et al. in view of Kajiwara et al.

B. Rejection of Dependent Claims 2-6 and 11-23 Under 35 U.S.C. §103(a)

The dependent claims 2-6 and 11-23 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Nakajima et al. in view of Kajiwara et al.

5 However, the Examiner has also failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a) for these dependent claims 2-6 and 11-23. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the

10 reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d

15 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Each of the dependent claims 2-6 and 11-23 depends on one of the independent claims 1 and 10. As such, these dependent claims include all the limitations of their respective base claims. Therefore, the Examiner has failed to

20 establish a *prima facie* case of obviousness for these dependent claims 6 and 11-23 for at least the same reasons as their respective base claims, as well as the reasons set forth below.

SUMMARY

25

The Examiner has failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a) for the independent claims 1 and 10, as well as the dependent claims 2-6 and 11-23. In particular, Examiner has not provided a valid suggestion or motivation to modify the polishing system of Nakajima et al. using the wafer loading/unloading device of Kajiwara et al. since the wafer loading/unloading device

of Kajiwara et al. cannot be used to transport carrying plates between the polishing unit of the polishing system of Nakajima et al., as suggested by the Examiner. Therefore, claims 1-6 and 10-23 cannot be rendered obvious in view of the cited reference of Nakajima et al. and Kajiwara et al.

5

For all the foregoing reasons, it is earnestly and respectfully requested that the Board of Patent Appeals and Interferences reverse the rejections of the Examiner regarding claims 1-6 and 10-23, so that this case may be allowed and pass to issue in a timely manner.

10

Respectfully submitted,

In Kwon Jeong

15

Date: October 16, 2006

By: Thomas H. Ham
Thomas H. Ham
Registration No. 43,654
Telephone: (925) 249-1300

20

VIII. Claims Appendix

- 1 1. An apparatus for polishing objects, said apparatus comprising:
 - 2 a first object carrier positioned over a first polishing surface;
 - 3 a second object carrier positioned over a second polishing surface;
 - 4 a first object relay device positioned between said first and second
 - 5 object carriers, said first object relay device including a first load-and-unload cup and
 - 6 a first pivoting drive mechanism, said first pivoting drive mechanism being
 - 7 configured to pivot said first load-and-unload cup to and from said first and second
 - 8 object carriers about a first pivoting axis to transfer said objects from said first object
 - 9 carrier to said second object carrier; and
 - 10 a second object relay device positioned adjacent to one of said first and
 - 11 second object carriers, said second object relay device including a second load-and-
 - 12 unload cup and a second pivoting drive mechanism, said second pivoting mechanism
 - 13 being configured to pivot said second load-and-unload cup to and from one of said
 - 14 first and second object carriers about a second pivoting axis to transfer said objects to
 - 15 said first object carrier or from said second object carrier.
- 1 2. The apparatus of claim 1 wherein said first and second object carriers are arranged in a first linear manner, and parking positions of said first and second load-and-unload cups of said first and second object relay devices are arranged in a second linear manner such that said first and second object carriers are positioned to be

5 substantially parallel to said first and second load-and-unload cups positioned at said
6 parking positions.

1 3. The apparatus of claim 2 wherein the distance between said first and second
2 object carriers is substantially equivalent to the distance between said parking
3 positions.

1 4. The apparatus of claim 1 further comprising an object cleaner configured to
2 clean said objects, said object cleaner being positioned such that a longer side of said
3 object cleaner is adjacent to a longer side of an area defined by said first and second
4 polishing surfaces.

1 5. The apparatus of claim 1 further comprising a first object transport device to
2 transfer said objects to said first object carrier or said second load-and-unload cup of
3 said second object relay device, and a second object transport device to transfer said
4 objects from said second object carrier or from said second load-and-unload cup.

1 6. The apparatus of claim 1 wherein said second object relay device is positioned
2 adjacent to said first object carrier such that said first object carrier is positioned
3 between said first and second object relay devices, and further comprising a third
4 object relay device positioned adjacent to said second object carrier such that said
5 second object carrier is positioned between said first object relay device and said third
6 object relay device, said third object relay device including a third load-and-unload

7 cup and a third pivoting drive mechanism, said third pivoting mechanism being
8 configured to pivot said third load-and-unload cup to and from said second object
9 carrier about a third pivoting axis to transfer said objects from said second object
10 carrier.

1 10. An apparatus for polishing objects, said apparatus comprising:
2 a plurality of object carriers positioned over a plurality of polishing
3 surfaces; and

4 a plurality of object relay devices positioned between said object
5 carriers such that at least one object relay device is positioned between two adjacent
6 object carriers, each object relay device including a load-and-unload cup and a
7 pivoting drive mechanism, said pivoting drive mechanism being configured to pivot
8 said load-and-unload cup to and from said two adjacent object carriers about a
9 pivoting axis to transfer said objects between said two adjacent object carriers.

1 11. The apparatus of claim 10 wherein said object carriers are arranged in a linear
2 manner.

1 12. The apparatus of claim 11 wherein parking positions of load-and-unload cups
2 of said object relay devices are further arranged in a linear manner such that said
3 object carriers are positioned to be substantially parallel to said load-and-unload cups
4 positioned at said parking positions.

1 13. The apparatus of claim 12 wherein the distance between adjacent object
2 carriers of said object carriers is substantially equivalent to the distance between
3 adjacent parking positions of said parking positions.

1 14. The apparatus of claim 10 wherein parking positions of load-and-unload cups
2 of said object relay devices are arranged in a linear manner.

1 15. The apparatus of claim 10 further comprising a first object transport device to
2 transfer said objects to a first end object carrier of said object carriers, and a second
3 object transport device to transfer said objects from a second end object carrier of said
4 object carriers.

1 16. The apparatus of claim 10 further comprising an additional object relay device
2 positioned to transfer said objects to or from a first end object carrier of said object
3 carriers, said additional object relay device including a load-and-unload cup and a
4 pivoting drive mechanism.

1 17. The apparatus of claim 16 further comprising a first object transport device to
2 transfer said objects to said load-and-unload cup of said additional object relay
3 device, and a second object transport device to transfer said objects from a second
4 end object carrier of said object carriers.

1 18. The apparatus of claim 16 further comprising a first object transport device to
2 transfer said objects to a second end object carrier of said object carriers, and a

3 second object transport device to transfer said objects from said load-and-unload cup
4 of said additional object relay device.

1 19. The apparatus of claim 16 further comprising a second additional object relay
2 device positioned to transfer said objects to a second end object carrier of said object
3 carriers, said second additional object relay device including a load-and-unload cup
4 and a pivoting drive mechanism.

1 20. The apparatus of claim 19 further comprising a first object transport device to
2 transfer said objects to said load-and-unload cup of said additional object relay
3 device, and a second object transport device to transfer said objects from said load-
4 and-unload cup of said second additional object relay device.

1 21. The apparatus of claim 10 wherein said object carriers are arranged such that
2 distances between adjacent object carriers are substantially equivalent.

1 22. The apparatus of claim 10 wherein parking positions of load-and-unload cups
2 of said object relay devices are arranged such that distances between adjacent load-
3 and-unload cups are substantially equivalent when said load-and-unload cups are
4 positioned at said parking positions.

1 23. The apparatus of claim 10 further comprising an object cleaner configured to
2 clean said objects, said object cleaner being positioned such that a longer side of said

- 3 object cleaner is adjacent to a longer side of an area defined by said polishing
- 4 surfaces.

Evidence Appendix

NONE

IX. Related Proceedings Appendix

NONE